WHAT IS CLAIMED:

1	1.	A process for producing a silane-crosslinked thermoplastic polymer
2	comprising:	
3	a)	providing a mixture of:
4		(i) at least one silane possessing an unsaturated organic function;
5		(ii) at least two free radical initiators, the first initiator having a first half-
6		life temperature and the second initiator having a second half-life
7		temperature being higher than said first half-life temperature;
8		(iii) at least one thermoplastic polymer; and,
9	b)	reacting the mixture of step (a) under reactive mechanical-working
10		conditions and exposure to moisture to provide crosslinked polyolefin.
1	2.	The process of Claim 1 wherein the thermoplastic polymer is at least one
2	polyolefin sel	ected from the group consisting of high-pressure low-density polyethylene,
3	medium/low-p	oressure high-density polyethylene, low-pressure low-density polyethylene,
4	medium-densi	ty polyethylene, an ethylene- α -olefin copolymer, polypropylene, an
5	ethylene-ethyl	acrylate copolymer, an ethylene-vinyl acetate copolymer, an ethylene-
6	propylene cop	olymer, an ethylene-propylene-diene terpolymer, an ethylene-butene
7	copolymer, po	lymethyl-pentene-1, polybutene, chlorinated polyethylene, an ethylene-
8	vinyl acetate-o	chlorine terpolymer, and the like, and mixtures thereof.

1 3. The process of Claim 1 wherein the silane possesses the general formula 2 RR'SiY₂ wherein R represents a monovalently olefinically unsaturated hydrocarbon or hydrocarbonoxy radical, each Y represents a hydrolysable organic radical and R 3 represents an R radical or a Y radical. 1 4. The process of Claim 3 wherein the R radical or the Y radical is selected 2 from the group consisting of vinyl, allyl, butenyl, cyclohexenyl, cyclopentadienyl, 3 cyclohexadienyl. 4 CH2=C(CH3)COO(CH2)3-, 5 CH2=C(CH3)COOCH2CH2O(CH2)3- and 6 OH 7 CH2=C(CH2)COOCH2CH2OCH2CHCH2O(CH2)2--. 8 5. The process of Claim 3 wherein the group Y represents a hydrolysable 1 organic radical selected from the group consisting of alkoxy radicals, acyloxy radicals, 2 oximato radicals and amino radicals. 3 1 6. The process of Claim 3 wherein the silane is vinyl triethyoxysilane and/or 2 vinyl trimethoxysilane.

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of the first free radical initiator is from about 80° to about 160°C.

The process of Claim 1 wherein the 0.1 hour half-life temperatures

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- 1 8. The process of Claim 1 wherein the 0.1 hour half-life temperatures
- 2 of the first free radical initiator is from about 90° to about 155°C.
- 1 9. The process of Claim 1 wherein the 0.1 hour half-life temperature
- 2 of the second free radical initiator is from about 125° to about 190°C.
- 1 10. The process of Claim 1 wherein the 0.1 hour half-life temperature
- 2 of the second free radical initiator is from about 140° to about 170°C.
- 1 11. The process of Claim 7 wherein the first free radical initiator is selected
- 2 from the group consisting of di (2,4-dichloro benzoyl) peroxide, tert-butyl
- 3 peroxypivalate, dilauroyl peroxide, dibenzoyl peroxide, tert-butyl peroxy-2-
- 4 ethylhexanoate, 1,1 di(tertbutylperoxy)-3,3,5-trimethylcyclohexane, di(tertbutylperoxy)
- 5 cyclohexane, tert-butyl peroxy-3,5,5-trimethylhexanoate, tert-butyl peroxyacetate, tert-
- 6 butylperoxybenzoate, di-tert-amyl peroxide, dicumyl peroxide, di(tert-
- 7 butylperoxyisopropyl)benzene and 2.5-dimethyl-2.5-di(tert-butylperoxy)hexane.
- 1 12. The process of Claim 9 wherein the second free radical initiator is selected
- 2 from the group consisting of tert-butyl peroxyacetate, tert-butylperoxybenzoate, di-tert-
- 3 amyl peroxide, dicumyl peroxide, di(tert-butylperoxyisopropyl)benzene, 2,5-dimethyl-
- 4 2.5-di(tert-butylperoxy)hexane, tert-butyl cumyl peroxide, 2.5-dimethyl-2.5-di(tert-
- 5 butylperoxy)hexyne-3 and di-tertbutylperoxide.

- 1 13. The process of Claim 1 wherein mixture (a) further includes at least one
 2 additional component selected from the group consisting of catalysts, stabilizers, fillers,
- 3 antioxidants, processing aids, oils, plasticizers, pigments and lubricants.
- 1 14. The crosslinked polyethylene produced by the process of Claim 1.
- 1 15. The crosslinked polyethylene produced by the process of Claim 2.
- 1 16. The crosslinked polyethylene produced by the process of Claim 3.
- The crosslinked polyethylene produced by the process of Claim 4.
- 1 18. The crosslinked polyethylene produced by the process of Claim 5.
- 1 19. The crosslinked polyethylene produced by the process of Claim 6.
- 1 20. The crosslinked polyethylene produced by the process of Claim 7.
 - The crosslinked polyethylene produced by the process of Claim 8.

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1 22. The crosslinked polyethylene produced by the process of Claim 9.

1 23. The crosslinked polyethylene produced by the process of Claim 10. 1 24. The crosslinked polyethylene produced by the process of Claim 11. 1 25. The crosslinked polyethylene produced by the process of Claim 12. 26. The crosslinked polyethylene produced by the process of Claim 13. 1 27. A composition comprising: 2 (i) at least one silane possessing an unsaturated organic function; at least two free radical initiators, the first initiator having a first 3 (ii) 4 half-life temperature and the second initiator having a second half-life temperature, said 5 second half-life temperature being higher than said first half-life temperature; 6 (iii) optionally one or more condensation catalysts; optionally, one or more stabilizers, stabilizer packages, inhibitors 7 (iv) 8 or free radical scavengers; and, 9 (v) optionally, other additives such as fillers, colorants, processing

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aids, etc.